



THE THAMES VALLEY DISTRICT SCHOOL BOARD

HURON PARK SECONDARY SCHOOL
Department of Science



OUTLINE OF COURSE OF STUDY

Course Name: Chemistry
Level of Difficulty: College Level
Prerequisites: SNC 2D or 2P

Course Code: SCH4C1
Grade Level: 12
Credit Value: 1

Ministry Guideline: The Ontario Curriculum, Science, 2000

Course Description/Rationale:

This course introduces students to the concepts that form the basis of modern chemistry. Students will study qualitative analysis, quantitative relationships in chemical reactions, organic chemistry and electrochemistry, and chemistry as it relates to the quality of the environment. Students will employ a variety of laboratory techniques, develop skills of data collection and scientific analysis, and communicate scientific information using appropriate terminology. Emphasis will be placed on the role of chemistry in daily life and in the development of new technologies and products.

Textbook: Chemistry 12: College Preparation, L. Davies, M. Di Giuseppe, T. Gibb, M. Sanader, A. Vavitsas, ITP Nelson, 2004

Overall Expectations of the Course:

MATTER AND QUALITATIVE ANALYSIS (22 HOURS)

- ☞ demonstrate an understanding of the basic principles of qualitative analysis and underlying theories;
- ☞ carry out qualitative analyses, using flow charts and appropriate laboratory equipment and instruments;
- ☞ describe the role and importance in society of some of the applications of qualitative analysis.

ORGANIC CHEMISTRY (22 HOURS)

- ☞ demonstrate an understanding of the names and properties of organic compounds and some of their reactions;
- ☞ carry out various laboratory tests and reactions involving organic compounds;
- ☞ describe the importance of organic compounds in consumer products, technological devices, and biochemical applications, and explain some of the issues related to their environmental and social impact.

ELECTROCHEMISTRY (22 HOURS)

- ☞ demonstrate an understanding of the chemical processes that take place in galvanic and electrolytic cells;
- ☞ investigate through experimentation the ease of oxidation of metals, and build electrochemical cells and describe their functioning;
- ☞ explain the importance for industry and the consequences for the environment of common electrochemical processes.

CHEMICAL CALCULATIONS (22 HOURS)

- ☞ demonstrate an understanding of the mole concept as well as of quantitative relationships in chemical reactions;
- ☞ use techniques of quantitative analysis in the preparation of standard solutions, and solve problems involving the analysis of quantities in chemical reactions, using both theoretical and experimentally measured quantities;
- ☞ explain the importance of quantitative chemical relationships in industry and in everyday life.

CHEMISTRY IN THE ENVIRONMENT (22 HOURS)

- ☞ demonstrate an understanding of the nature and role of elements and compounds in the environment, including acids and bases, and gases in the atmosphere;
- ☞ use the techniques involved in the quantitative analysis of solutions effectively and accurately;
- ☞ assess the effects and the implications for society of the levels of various substances in the environment, and demonstrate an awareness of the need for both government and individual citizens to take measures that will ensure a healthy environment.

Teaching/Learning Strategies:

Strategies include, but are not limited to:

Whole Group Activities:

- ▶ socratic lessons
- ▶ class discussion
- ▶ video presentations
- ▶ development of notes/organizers
- ▶ internet projects
- ▶ graphical analysis
- ▶ oral presentations
- ▶ demonstrations

Small Group Activities:

- ▶ experiments
- ▶ discussion
- ▶ internet searches
- ▶ oral presentations
- ▶ projects
- ▶ problem solving
- ▶ graphical analysis

Individual Activities:

- ▶ teacher-student conferencing
- ▶ journal response
- ▶ graphical analysis
- ▶ note-taking
- ▶ research
- ▶ textbook referencing
- ▶ formal report writing
- ▶ problem solving

Assessment and Evaluation Strategies:

Students will be provided with numerous and varied opportunities to demonstrate the full extent of their understanding and acquired skills (as outlined in the curriculum expectations) across all four categories of assessment. Students will be assessed and evaluated through the use of lab reports, testing, presentations, and group work. Students will be assessed on their understanding of basic concepts, on their inquiry skills, on their ability to communicate, and on their ability to relate science to technology, society, and the environment.

Seventy percent of a student's final mark will be determined as follows:

| | |
|---|------------|
| Knowledge/Understanding of Concepts (Tests, quizzes, problem sets, demonstrations) | 20% |
| Inquiry Skills (Initiating and planning, performing and recording, analyzing and interpreting) | 20% |
| Communication Skills (Essays, laboratory reports, posters, presentations) | 15% |
| Applications to Technology and the Environment | 15% |

According to Ministry requirements, 30% of the student's final grade will be based on a final evaluation in the form of an examination, performance, essay, and/or other method of evaluation suitable to the course content and administered towards the end of the course. All students will write a final examination worth *at least* 20% of their final mark. Culminating activities may be assigned within each unit of study. These activities will account for the remaining 10% of the student's mark to make up the 30% of the final grade.

COMPLETION OF ASSIGNED WORK

It is the expectation of all students in Science that assignments will be completed on time. Due dates for assignments will be established in cooperation with the students in advance. Due dates shall reflect the nature of the assignment, the work loads of both students and teachers, and the need for students to learn responsibility and attention to time management.

In the event that a student is late with work associated with an assignment that contributes to the achievement mark of the student, the following will apply:

1. On the due date, the teacher will collect completed assignments and record, in their markbook, the students that completed the work on schedule.
2. Students who do not have the assignment completed by the due date may choose to continue to work on the remaining portion of the assignment up to:
 - (a) 3 school days for laboratory reports and problem sets
 - (b) 5 school days for major assignments such as essays, research projects, culminating activities (see exception below)
3. The late assignment may be submitted any time within the time frame described in section 2. The late assignment **must** be accompanied by a note, stapled to the assignment, and signed by the student (and parent or legal guardian for students under the age of 18) indicating the reason for the assignment being late. *These notes will be used during parent contacts and during intervention meetings to respond to cases of consistent failure to complete and submit work by the designated due date. If a note does not accompany the late assignment, a mark of zero will be granted.*
4. Any remaining work on the assignment will not be accepted after the time frame described in section 2 unless there are extenuating circumstances.

Extenuating circumstances must be supported by a note from the parent or guardian which is acceptable to the Principal. Acceptable extenuating circumstances would include, but not be limited to, circumstances such as illness and family emergencies. Students who are absent as a result of sanctioned school related activities are responsible for work missed but are not required to provide a note and are to be given appropriate consideration.

5. **Scheduled tests, seminars, presentations and performances**, even if they are part of a culminating activity, are not subject to the late policy for **MAJOR** assignments. If a student is absent for such an evaluation, his or her parent (or the student who is over 18) must contact the school prior to or on the day of the absence. The parent (or student over 18) must indicate that an evaluation is being missed in order to avoid a mark of "zero".

The evaluation **will be completed on the day the student returns to class** if the absence is deemed acceptable by the school administration. A note from the parent/guardian accompanies the student after it has been validated by the office. If a parent or student knows in advance that an evaluation will be missed, he or she must notify the teacher in advance of the announced date, so that other arrangements can be made with the approval of the teacher.